DOCUMENT RESUME

ED 336 220 RC 018 282

| | |
|---|---|
| TITLE | Treatment of Farm Families under Need Analysis for Student Aid. Final Report. |
| INSTITUTION | National Computer Systems, Inc., Arlington, VA. |
| SPONS AGENCY | Department of Education, Washington, DC. Office of Planning, Budget, and Evaluation. |
| PUB DATE | Mar 91 |
| CONTRACT | LC-89082001 |
| NOTE | 39p. |
| PUB TYPE | Reports - Research/Technical (143) |
| EDRS PRICE | MF01/PC02 Plus Postage. |
| DESCRIPTORS | Comparative Analysis; Family Financial Resources; *Family Income; *Farmers; *Federal Aid; Financial Aid Applicants; Higher Education; *Need Analysis (Student Financial Aid); *Student Financial Aid |
| IDENTIFIERS | *Pell Grant Program |

ABSTRACT

In response to Congressional request, this report compares the treatment of student financial aid applicants from farm families and non-farm families under two need-analysis formulae. Both the need-analysis methodology for Pell Grants and the Congressional Methodology (CM) for other federal aid calculate ability to pay as a function of income and net assets. Data samples included over 40,000 Title IV applicants seeking federal student aid in both 1987-88 and 1988-89. Also examined were selected literature on farm finances, definitions of farm income by the Internal Revenue Service (IRS) and U.S. Department of Agriculture, cross-year changes in reported income and assets, and farm borrowing restrictions. This report concludes that the current system of need analysis for federal student aid is reasonably fair and does not systematically treat farm families differently from other groups. However, minor or random discrepancies may arise from the large cross-year variability in the financial condition of some farm families, from IRS income definitions, and from borrowing limits on farmers. The Pell formula provides a higher asset protection allowance for farms than for other businesses. On the other hand, the CM formula provides an age-based asset reserve. This report includes 16 bar graphs, explanations of research methodology, and suggestions for identifying farmers prone to great variability in income. (SV)

**********
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
**********

ED386220

# Treatment of Farm Families Under Need Analysis for Student Aid

## Final Report

March 1991

Prepared Under Contract by:

Westat, Inc.
Rockville, Maryland

National Computer Systems, Inc.
Arlington, Virginia

Contract No.: LC89082001
Task No.: 004
Work Request No.: 026

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

U.S. DEPARTMENT OF EDUCATION • OFFICE OF PLANNING, BUDGET & EVALUATION

RC018282

BEST COPY AVAILABLE

## *TABLE OF CONTENTS*


1. INTRODUCTION, BACKGROUND, AND MAJOR CONCLUSIONS . . . . . 1

    1.1 Overview of Study Methodology . . . . . 2

    1.2 Major Conclusions . . . . . 2

2. MEASURING FARM INCOME AND ASSETS . . . . . 5

    2.1 Farm Income . . . . . 5

    2.2 Farm Assets . . . . . 6

3. CROSS-YEAR CHANGES IN INCOME AND ASSETS FOR FARM FAMILIES AND NON-FARM FAMILIES . . . . . 9

    3.1 Methodology . . . . . 10

    3.2 Cross-Year Changes in Income . . . . . 11

    3.3 Cross-Year Changes in Net Worth . . . . . 16

    3.4 Implications of Changes in Income and Assets on SAI and FC . . 21

4. REDUCING DIFFERENCES BETWEEN FARM AND NON-FARM FAMILIES . . 29

APPENDIX A: Estimates of Farm Income. . . . . 33

APPENDIX B: Methodology: Comparing Change Across Years. . . . . 35

## *LIST OF EXHIBITS*


Exhibit 1: Percentage of Families with Increases in Income from 1987-88 to 1988-89 by Income Category..... 13

Exhibit 2: Mean Increases in Income from 1987-88 to 1988-89 Among Families with Increases by Income Category..... 13

Exhibit 3: Percentage of Families with Decreases in Income from 1987-88 to 1988-89 by Income Category..... 15

Exhibit 4: Mean Decreases in Income from 1987-88 to 1988-89 Among Families with Decreases by Income Category..... 15

Exhibit 5: Percentage of Families with Increases in Net Assets from 1987-88 to 1988-89 by Asset Category..... 17

Exhibit 6: Mean Increases in Net Assets from 1987-88 to 1988-89 Among Families with Increases by Asset Category..... 17

Exhibit 7: Percentage of Families with Decreases in Net Assets from 1987-88 to 1988-89 by Asset Category..... 19

Exhibit 8: Mean Decreases in Net Assets from 1987-88 to 1988-89 Among Families with Decreases by Asset Category..... 19

Exhibit 9: Percentage of Farm Families with Increases in Farm and Non-Farm Assets from 1987-88 to 1988-89 by Asset Category..... 22

Exhibit 10: Mean Increases in Farm and Non-Farm Assets from 1987-88 to 1988-89 Among Farm Families with Increases by Asset Category..... 22

Exhibit 11: Percentage of Farm Families with Decreases in Farm and Non-Farm Assets from 1987-88 to 1988--89 by Asset Category..... 23

Exhibit 12: Mean Decreases in Farm and Non-Farm Assets from 1987-88 to 1988-89 Among Farm Families with Decreases by Asset Category..... 23

Exhibit 13: Mean SAI Change from 1987-88 to 1988-89 by Income Category..... 25

Exhibit 14: Mean FC Change from 1987-88 to 1988-89 by Income Category..... 25

Exhibit 15: Mean SAI Change from 1987-88 to 1988-89 by Asset Category..... 27

Exhibit 16: Mean FC Change from 1987-88 to 1988-89 by Asset Category..... 27

# 1. INTRODUCTION, BACKGROUND, AND MAJOR CONCLUSIONS

Although farm families represented only 2.7 percent of the more than 6.5 million Pell Grant applicants for the 1988-89 award year, they nonetheless constitute an important segment of the student population, especially in more rural areas of the country. Moreover, the complexities of and variability in farm income and assets make it difficult to determine farm families' need for student financial aid.

In Section 1303(e) of the Higher Education Amendments of 1986, Congress requested that the Department of Education (ED) examine the treatment of farm families under the Federal student financial aid formulae. In fulfillment of the Congressional request, this study compares the treatment of student financial aid applicants from farm families and non-farm families under the current need analysis formulae. The motivation for the study lay in Congressional concern that the unique financial circumstances of farm families may not be taken into account under the current need analysis structure. Farm families may be less likely to be eligible for aid because of the relatively high value of their assets, assets which may be necessary to operate the farm and generate income from it. In addition, changes in farm income from one year to the next may make farmers appear to have more disposable income in "good" years than they actually do, because in these years farm families must set aside reserves for "bad" years.

Under current law, financial need is determined by one of two need analysis methodologies, one for Pell Grants and the other (the Congressional Methodology) for other Federal aid. Despite some differences between the two methodologies, both methods calculate ability to pay as a function of income (taxable and nontaxable) and net assets. Both take into account basic subsistence costs (food and housing) that depend on family size, employment expenses, taxes, the number of family members enrolled in postsecondary education, and unusual medical expenses. Both also protect a portion of assets (including farm/business assets) from assessment for postsecondary education costs, although each does so differently. The Pell approach provides a higher asset protection allowance for assets that include a farm than for business assets that do not include a farm. The Congressional Methodology makes no distinction between farm and non-farm business assets, but does provide an asset protection allowance that increases with the age of the older parent or independent student.

## 1.1 Overview of Study Methodology

The study used data from samples of farm family and non-farm family Title IV applicants who applied for student aid in both 1987-88 and 1988-89 to examine the differences between these two groups.

This examination was not limited to the need analysis methodologies. Because need analysis relies on other sources for definitions of critical data elements (such as income and assets), several other issues also were examined. The study included:

- A review of the selected literature on farm finances
- An examination of farm income as defined by the Internal Revenue Service and the U.S. Department of Agriculture, in consultation with an agricultural economist
- A comparison of cross-year changes in reported income and assets for farm and non-farm families and the impact of these changes on need analysis
- A review of farm borrowing restrictions

## 1.2 Major Conclusions

**Need Analysis.** The current system of need analysis for Federal student aid is reasonably fair and does not systematically treat any one group significantly differently from others. However, in a process as complex as that of determining eligibility for student aid, there are bound to be minor discrepancies in the treatment of certain groups of applicants. Such is the case with farmers, who appear to benefit slightly, at least in the short run, from the current system because of its reliance on taxable income. Some apparent disadvantages in need analysis for farm families due to asset protection allowances are minor and affect few farm families seeking financial aid. Thus, there is nothing to suggest that farmers are not receiving reasonably fair levels of student aid and there appears to be no reason to change need analysis for farm families.

**Variability in Income and Assets.** Although the study suggests that need analysis treats farm and non-farm families similarly, there are some differences in the extent to which need analysis can assess the ability of families to contribute to the cost of education if those families are subject to large variability in their financial condition from one year to the next. This is the case because the need analysis formulae use data from the previous year to determine ability to pay in the current year.

Our analysis confirms literature indicating that farm families experience more annual variability in income and assets than non-farm families. For the 2 years examined, the average farm family had increases in income and assets that exceeded those of the average non-farm family. This means that, on average, need analysis understated the ability to pay for the cost of education more for farm families than for non-farm families, because farm families experienced greater financial gains than non-farm families during the same period of time.

It is important to emphasize that farm families experienced greater gains for the 2 years examined because these were good economic years for farmers.[1] In other years, the farm sector might perform worse than or about the same as other sectors of the economy. Thus, any group with greater than average variability in financial condition may have an advantage or disadvantage in need analysis for a given year. However, current year economic conditions cannot be verified and may be even worse than previous data as predictors of ability to pay.

The results of this study indicate that farm families who have experienced annual decreases in income and assets may not have access to the aid they need in a given year. However, the same is true for non-farm families. To investigate further the actual impact of changing economic circumstances, a case study among financial aid administrators at institutions with sizeable numbers of farm applicants could be conducted to gauge their assessment of the situation and find out how they have responded in the past and what other options to address the situation might exist.

**Defining Income.** Farm families applying for student aid benefit from the use of Adjusted Gross Income (AGI)--calculated for Federal tax returns--as income. The accounting methods that determine taxable farm income provide an advantage to farmers because they are designed to encourage farm enterprises and tend to underestimate farm income. Unfortunately, there is no readily available substitute to the use of taxable income for financial aid purposes as most farmers use only the accounting methods sanctioned by the Internal Revenue Service.

**Borrowing Against Farm Assets.** Borrowing limits set by banking groups may be a disadvantage to farm families. Some literature on the financial condition of farmers indicates that the return on investment for farm assets is low compared to other business assets. Furthermore, farmers are limited by the Farm Credit System to borrowing 65 percent of set land value. In addition, farmers seeking an educational loan against their assets might find their future ability to borrow for income-generating purposes reduced.

Recognizing the additional borrowing problems that farmers may face, the Pell need analysis approach provides a higher asset protection allowance for farms than other businesses. In contrast, the Congressional Methodology (CM) makes no distinction between farm and non-farm business assets, as it uses an

---

[1] According to the Economic Report of the President, 1990, farm income increased at a greater rate than non-farm income from 1986 to 1987, the years for which income was reported on the 1987-88 and 1988-89 student aid applications.

asset protection allowance based on the combined net value of all assets. However, the CM also provides an age-based asset reserve. The result is that some families, farm families among them, may receive a greater total asset reserve under CM than they would under the Pell approach.

# 2. MEASURING FARM INCOME AND ASSETS

The goal of need analysis is to determine need fairly by applying similar standards to all applicants with comparable financial conditions. Yet it is sometimes difficult to determine what financial information means for different groups of the population. Two factors that complicate need analysis for farm families are: 1) different ways of determining farm income after expenses; and 2) the difficulty of assessing the fair market value of farm assets.

## 2.1 Farm Income

Need analysis uses taxable income and certain other non-taxable sources of income to determine a family's contribution toward educational expenses. To the extent that taxable income is calculated differently for farmers and non-farmers, need analysis may treat farmers differently from others. Taxable income provides a fairly simple measure of the income and financial condition of people who rely on salaries and wages for most of their income. However, for people who own a farm or business, taxable income from the farm or business may not reflect financial condition, since taxable income derived from a farm or business may not accurately measure the family's ability to cover cash costs.

Federal tax laws benefit farmers by permitting them to use a cash basis of accounting. Other businesses, for the most part, use an accrual base. Accrual differs from cash accounting in the treatment of inventories, accounts receivable or payable, and prepaid expenses. Cash accounting is relatively simple; receipts and expenses are recognized when they occur. Moreover, cash accounting is the method used by most individuals, including 96 to 98 percent of all farmers (Seger and Lins, 1986)[2].

Cash accounting is advantageous to farmers because it enables them to time their income and expenses to minimize taxable income. Consider the example of a farmer who sells the 1988 harvest before December 31, 1988 and defers sale of the 1989 harvest until after January 1, 1990. This hypothetical farmer reports no income for 1989. By managing the timing of sales and purchases (for seed, chemicals, livestock, machinery, etc.) a farmer can increase or decrease reported income for a given year. In their study of a sample of Illinois farms from 1981 to 1984, Seger and Lins estimated that farmers derive

---

[2] Seger, D. & Lins, D.A. (1986). Cash versus accrual measures of farm profitability. Department of Agricultural Economics, Research and Policy Issues in a Period of Financial Stress. Columbus, Ohio: The Ohio State University.

considerable advantage from cash accounting. Specifically, over the 4-year period, cash accounting led to income that is 36 percent lower than would result from accrual accounting. While cash accounting may not be able to maintain this advantage indefinitely, it is worth noting that it can do so for at least 4 years.

USDA derives measures of the financial strength of farms from its annual Farm Costs and Returns Survey. One measure is net cash income, which provides a current, short-term perspective on the ability of a farmer to cover cash costs. It is defined as gross farm receipts less cash operating expenses, with the latter including interest repayment on debt but excluding repayment of principal. Another measure of farm income is net business income. Basically, net business income equals net cash income less depreciation.

While net business income more closely matches taxable income as defined by the Internal Revenue Service (IRS), it also differs from taxable income in several ways. First, USDA bases its estimates of income on the value of farm output, while the IRS limits income to market transactions. Second, some items that are considered income by USDA are considered capital gains by the IRS. Third, net business income is accrual based, while taxable farm income usually relies on cash accounting. Overall, USDA's aggregate estimated net business income for farms substantially exceeds that of the IRS. (Some of the reasons for this difference are provided in Appendix A.) Comparisons of USDA and IRS definitions of farm income reveal that *taxable income generally under-represents the financial condition of a farmer*. Thus, taxable income reported on applications for student aid tends to *understate* the ability of a farm family to pay for educational costs relative to the ability of a "similar" non-farm family.

Any advantages of the use of taxable income for farmers apply only to income derived from farm operations; taxable off-farm income is treated the same way for farmers as it is for all other taxpayers. Off-farm income accounts for much of the total income for farmers, especially among small farm owners (more than 70 percent of small farms yield less than $40,000 in annual sales), who also are more likely to apply for Federal student financial aid. USDA estimates that 98 percent of net income for families with small farms came from off-farm sources in 1987. The percentage of net farm income from off-farm sources steadily decreases as farm sales rise, to 46 percent for farms with sales of $40,000 to $99,999, 17 percent for farms with sales of $100,000 to $499,999, and 4 percent for the largest farms.

## 2.2 Farm Assets

A major issue in valuation of assets reported on student aid applications is the extent to which applicants know and report the fair market value of their assets, particularly those that are subject to considerable fluctuation in value such as farm and business assets, home assets, and other real estate and investments. While any of these assets may have variable value, farms may be especially subject to fluctuations in their market value. This is because farms are not highly liquid. Farm values decrease when prospective buyers--most of

whom tend to be local--are scarce due to excess supply or high interest rates. Of course, farm values can increase if different conditions prevail.

Another issue in the valuation of farm assets is the distinction between the market value of a farm as farmland and the market value of a farm for other purposes. According to USDA data from 1987, land represents 70 percent of the value of farms. While all but two states give farms preferential treatment for tax assessment purposes by assessing farms at their value as farmland, applications for student financial aid do not provide any guidelines on the definition of fair market value. This may be an issue for farms near the urban fringe, where the value of farmland for other purposes is far greater than its value as farmland.

While farm applicants may have difficulty in determining the fair market value of their farm assets (and in separating the value of the farm house from the value of the farm itself), non-farm applicants may also have difficulty in determining the value of some of their assets. Quality control studies that measure error in student aid applications have revealed that applicants may use out-of-date assessments to estimate the value of some assets. However, the samples for these studies are not large enough to yield meaningful statistics on the error rate among farmers, who constitute a small percentage of applicants. Thus, we do not know if there are any differences in the accuracy of the estimates reported by farmers and non-farmers.

Another issue concerning farm assets is the ability of farmers to use their equity to obtain funds for educational costs. Compared to home owners and others, farmers have lower limits on the proportion of their equity on which they may borrow since the Farm Credit System has established a borrowing limit of 65 percent of the value of the land. The Farm Credit System and the American Bankers Association also indicate that it is more difficult for a farmer to borrow against farm equity for meeting postsecondary education expenses than it is for a homeowner to obtain a home equity loan. (Farmers may not have access to home equity loans because a farm house has limited value independent of the farm.) A farmer would have to meet both collateral and cash flow requirements and any borrowing for educational loans might limit future borrowing for farm-related, income-generating purposes. Thus, only the most credit-worthy farmers may qualify.

# 3. CROSS-YEAR CHANGES IN INCOME AND ASSETS FOR FARM FAMILIES AND NON-FARM FAMILIES

Farm income and assets can vary greatly from year to year due to weather, supply and demand in the national and international markets, cash accounting procedures that enable farmers to manage the year in which expenses and income are reported, and substantial fluctuations in the valuation of farm assets, especially farmland. Thus, any potential comparison of the treatment of farm and non-farm families under need analysis must consider changes in families' financial status over time.

Ability to pay for postsecondary education is generally a function of current income and assets. For example, educational payments for a student attending classes in September of 1988 would likely come primarily from three sources available at that time: cash remaining from income after other living expenses are paid, savings, and other currently available assets. Another possible source of educational payments might be money borrowed against anticipated future income.

However, some data used in need analysis pertain to the calendar year prior to the year in which the student enrolls, known as the base year. (For example, income reported for the 1988-89 application cycle would be from the calendar year 1987.) The use of base year income data is a function of practical necessity. In order to accommodate the institution's and student's planning, students planning to enroll in the fall may apply for aid as early as January. Thus, the most recent annual income data available at the time of application are from the prior (base) year. (Asset values are reported as of the application date.) Moreover, base year income data can be verified from tax returns and other records. If aid applicants were asked to report prospective income (e.g., expected 1988 income for the 1988-89 application period), there would probably be substantial errors due to the inability to forecast accurately or verify this income figure. (Indeed, quality control studies on student financial aid have suggested this.) The assumption implicit in the use of prior year data is that past year information is a reasonable proxy of current year information.

As long as farm families and non-farm families generally experience similar fluctuations in income and assets from year to year, there is no distinction in the way need analysis treats each group. However, if farm and non-farm families experience different fluctuations in income and assets, then using base year data may create differences between the two groups.

The data suggest that farm income is particularly variable for small farmers, who constitute most of the farm families applying for student financial aid.[3]

---

[3] Mean farm assets in the study sample of farm families were approximately $46,000 for 1987-88 and $49,000 for 1988-89, indicating that their farms were small on average.

For these farm families, the previous year's income is a weak predictor of current year income. Data from the annual Farm Costs and Returns Surveys from 1970 to 1988 show that for the average farm family, last year's income is a good predictor of next year's income. However, when the results are examined by sales volume, a different picture emerges. Specifically, last year's income is a good predictor of current income for the two largest classes of farms: those with sales of $500,000 or more and those with sales of $100,000 to $499,999. For smaller farms, last year's income is a weaker predictor, particularly for those with sales of $40,000 to $99,999. Since most financial aid recipients from farm families come from families with smaller farms (these farms constitute most of the farms in the country and generate lower taxable incomes), fluctuations in annual income may make the use of previous year income (as required by the student aid methodologies) a less than optimal basis for determining financial need in the current year.

## 3.1 Methodology

We designed a methodology that assesses changes in income and assets across a 2-year period and calculates their impact on need determination. To examine time frame differences between farm and non-farm families, we compared application data from the two most recent application years available when this study was begun in the fall of 1989: 1987-88 and 1988-89. The base year income data for these two application cycles were from calendar years 1986 and 1987, respectively.

It is important to reiterate that during the years examined for this study, the farm sector outperformed the non-farm sector as measured by growth in income. Thus, if the families of applicants for student financial aid reflect this pattern, we would expect farm families to have fared better than non-farm families in income gains. If so, then the use of lower base year income would benefit farm families to a greater extent than non-farm families.

We examined samples of farm and non-farm applicants who applied for Federal student aid for *both* the 1987-88 and 1988-89 award years. A total of 17,286 farm family applicants and 27,288 non-farm family applicants were included. (Additional information on the samples is contained in Appendix B.)

Ordinarily, to assess the impact of cross-year changes in income and/or assets we would simply compare the results of need analysis from one year to the next. However, changes in the law between 1987-88 and 1988-89 made direct comparison inappropriate. To correct for this, we used the data from each application year in the 1988-89 formulae and compared the results across years. Because our focus is on the comparison of farm families to non-farm families, any bias introduced by using data from the 1987-88 application period in the 1988-89 formulae applies equally to both groups. Thus, changes between farm families and non-farm families can be compared. The details of this methodological approach (matching data elements, comparing farm families to non-farm families, the impact of the Simplified Needs Test, and dealing with various cross-year changes) are explained in Appendix B.

Before presenting the results on changes in income and assets, several points about their presentation should be made.

- We refer to the figures obtained from a given year's application data by the application year. Thus, we refer to income and assets reported on the 1987-88 application as 1987-88 income and assets and the 1988-89 reported figures as 1988-89 income and assets. Technically, however, income reported on the 1987-88 application is for 1986, while income reported on the 1988-89 application is for 1987. For assets, the reported values are those at the time the application was completed.

- We discuss cross-year change in income and assets for those with increases, decreases, and no change. A small amount of variation, $\pm$ 1 percent, is permitted for the no change group. (For a family with an income of $15,000, which is typical for Pell applicants, this operationally defines no change in income as an increase or decrease of less than or equal to $150.)

- Income includes both taxable income (Adjusted Gross Income for tax filers) and non-taxable income.

- Net assets or net worth is defined as the sum of the fair market values of assets minus debts owed on those assets in four asset categories used on the application: business/farm, home, other real estate/investment, and cash/savings/checking.

First, we examine changes in income and assets from 1987-88 to 1988-89. Then we look at change in need determination.

## 3.2 Cross-Year Changes in Income

Overall, there is substantial cross-year variation in income among both farm families and non-farm families. For both groups, many more families reported increases in income than decreases across the 2 years examined. However, in proportional terms (i.e., change as a percentage of income), farm families showed much more variability in income than non-farm families.

- Farm families: The mean net change in income among applicants was $4,498. This is an increase of about 30 percent of the mean 1987-88 income of $15,220. While the mean net change was positive and high, it obscures the fact that 70 percent of farmers experienced increases in income, while 28 percent experienced decreases. With the narrow definition of no change used, only 2 percent fell into that category.

- Non-farm families: The mean net change in income among non-farm families was $1,764, 10 percent of the mean 1987-88 income of $17,590. This increase is about the same as the average growth in U.S. non-farm income for that period of 9.2 percent. As with

farm families, many more non-farm families (over 61 percent) reported increases in income than decreases (33 percent). About 6 percent had no change in income.

## Families with Increases in Income

Among families with increases in income, average increases were large, with the average increase for farm families much larger than that for non-farm families. This suggests that fluctuations in income are an economic reality for many Pell applicants, particularly those with some farm holdings.

- The mean dollar increase for the nearly 70 percent of farm families with increased income from 1987-88 to 1988-89 was $12,348. This increase is 90 percent of their mean 1987-88 income of $13,678. For the 61 percent of non-farm families reporting increases, the mean increase was $5,273 or 29 percent of the mean 1987-88 income for this group of $18,383.

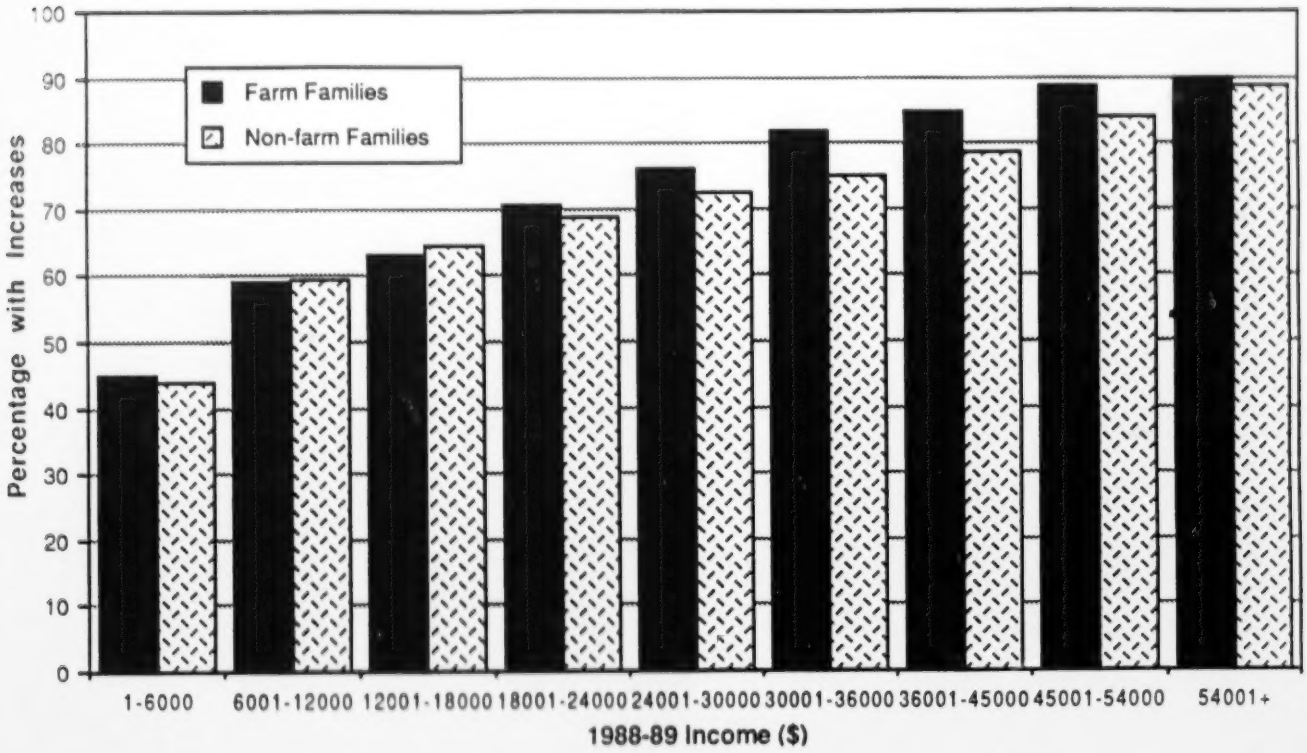
Exhibit 1 displays the percentage of farm and non-farm families with increases by 1988-89 income categories. Exhibit 2 shows the mean dollar amount of these increases by income categories. (Only positive income categories are shown in these exhibits. However, information on families with zero and negative income is discussed in the text when the number of families is large enough to warrant attention.)

For both farm families and non-farm families, those applicants with higher current year incomes were much more likely to experience increases in their income than those with lower incomes. Close to 40 percent of those in the lowest income groups had increases, rising to nearly 90 percent in the highest income groups.

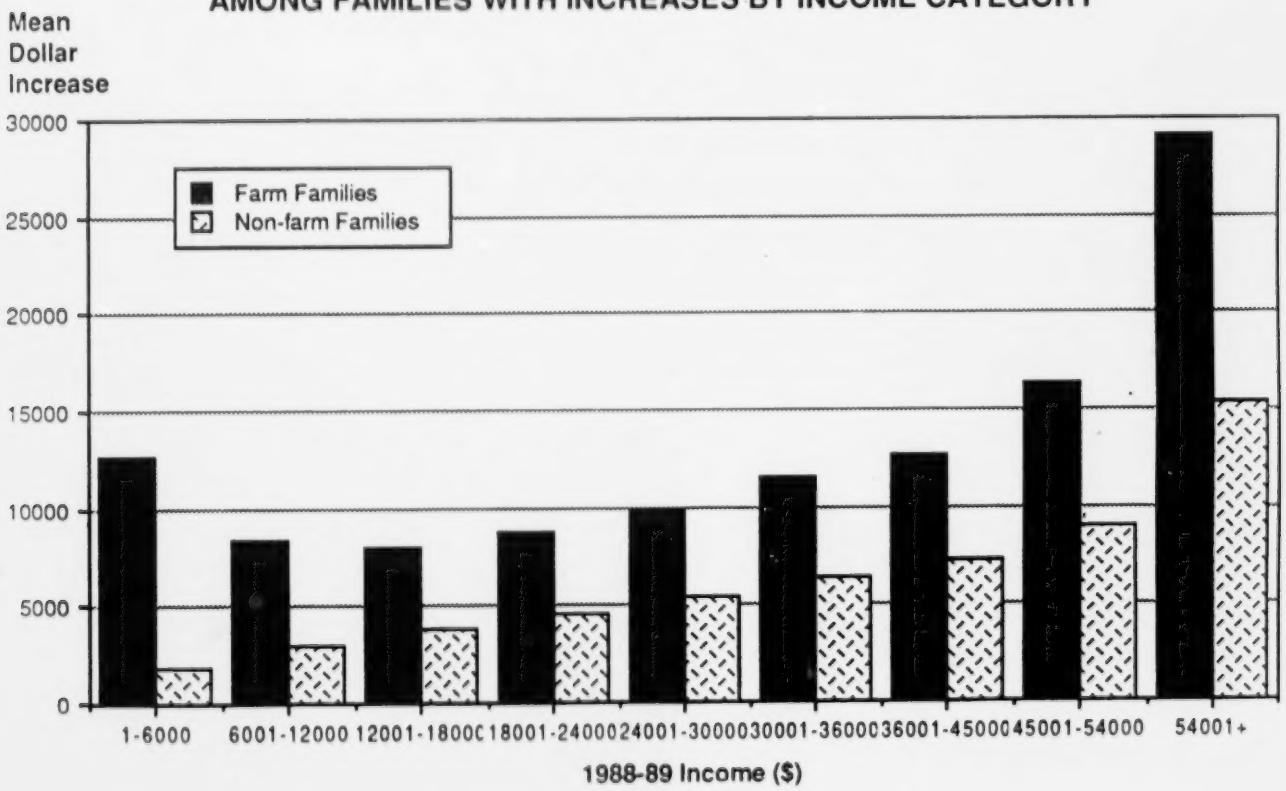
- For farm families, there was some variation in amount of increases in income relative to current income. Mean increases were relatively high in the four lowest income categories, but not so high for those with higher incomes. The mean increases for those with incomes up to $54,000 ranged from about $8,100 to $16,400. Only those relatively few applicants with incomes over $54,000 or with negative incomes (the latter are not shown in Exhibits 1 and 2) reported greater increases ($20,717 and $29,187, respectively).

- Dollar increases in income for non-farm families rose steadily with current income (from $1,827 for the lowest positive income group to $15,345 for the highest income group).

## EXHIBIT 1: PERCENTAGE OF FAMILIES WITH INCREASES IN INCOME FROM 1987-88 TO 1988-89 BY INCOME CATEGORY




## EXHIBIT 2: MEAN INCREASES IN INCOME FROM 1987-88 TO 1988-89 AMONG FAMILIES WITH INCREASES BY INCOME CATEGORY



## Families with Decreases in Income

Only a minority of families reported decreases in income. However, among families with decreases in income, the average drop in income was substantial.

- For farm families, the mean dollar decrease reported for the 28 percent of farm families with decreases was $14,763. This is 81 percent of the mean base year income of $18,153 for this group.

- For the 33 percent of non-farm families with decreases, the mean decrease was $4,467. This is 27 percent of the base year mean income for this group of $16,368.

Exhibit 3 depicts the percentage of farm and non-farm families with decreases in income by 1988-89 positive income categories. For both farm and non-farm families, decreases are concentrated among those with the lowest incomes, with approximately 50 percent of the lowest income groups reporting decreases, declining to less than 10 percent of the highest income groups. Exhibit 4 depicts the mean amount of decreases by income category.

- For farm families, the dollar amount of mean decreases were similar (ranging from about $6,100 to $8,300) for most income groups. Thus, lower income groups with decreases experienced greater drops in income. Those with the highest incomes (more than $54,000) had slightly greater decreases in income (-$11,354), while those with negative incomes (not shown in the exhibits) had far greater losses on average (-$55,686).

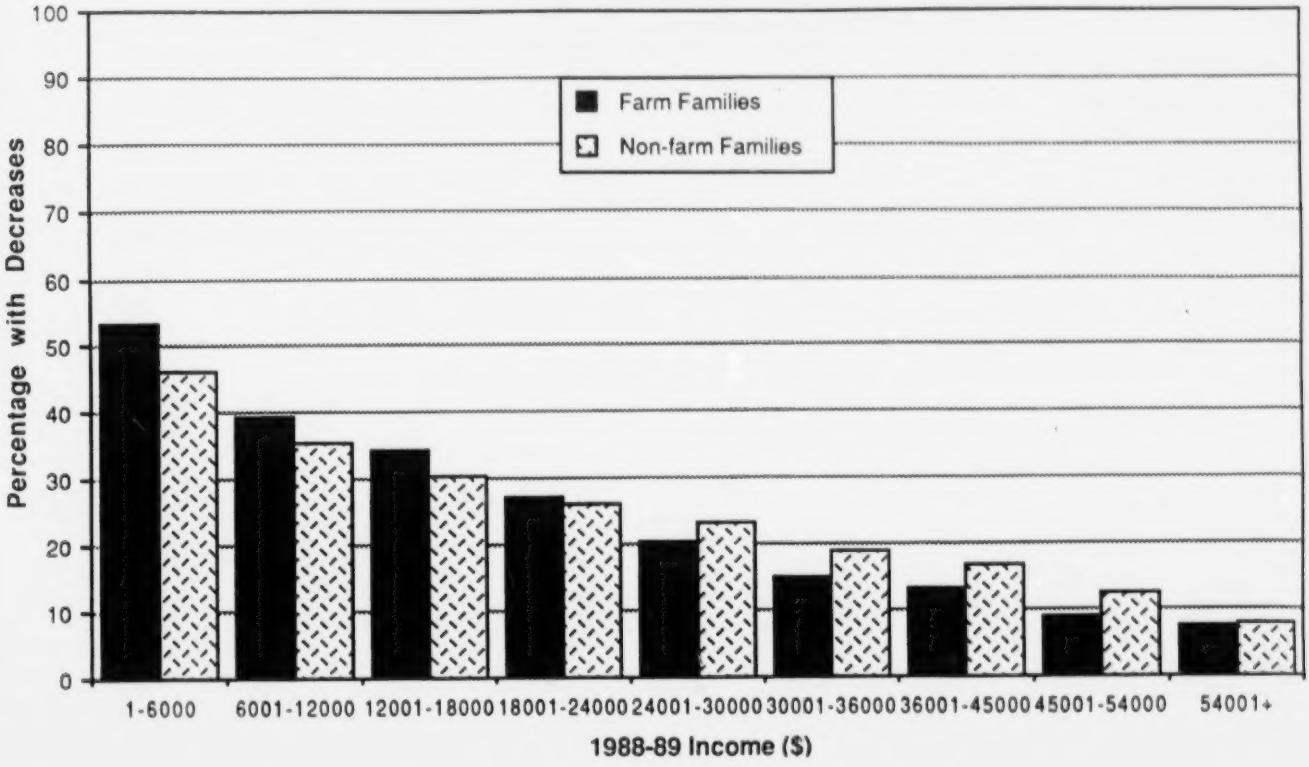
- For non-farm families, the dollar values of decreases in income rose with income, ranging from $3,840 for the lowest positive income group to $9,157 for the highest income group. Thus, decreases in income were more closely related to income. Families with zero income (not shown in the exhibits) also fit this pattern, showing the lowest mean decrease (-$1,134). Few non-farm families reported negative incomes.

## Summary of Income Changes

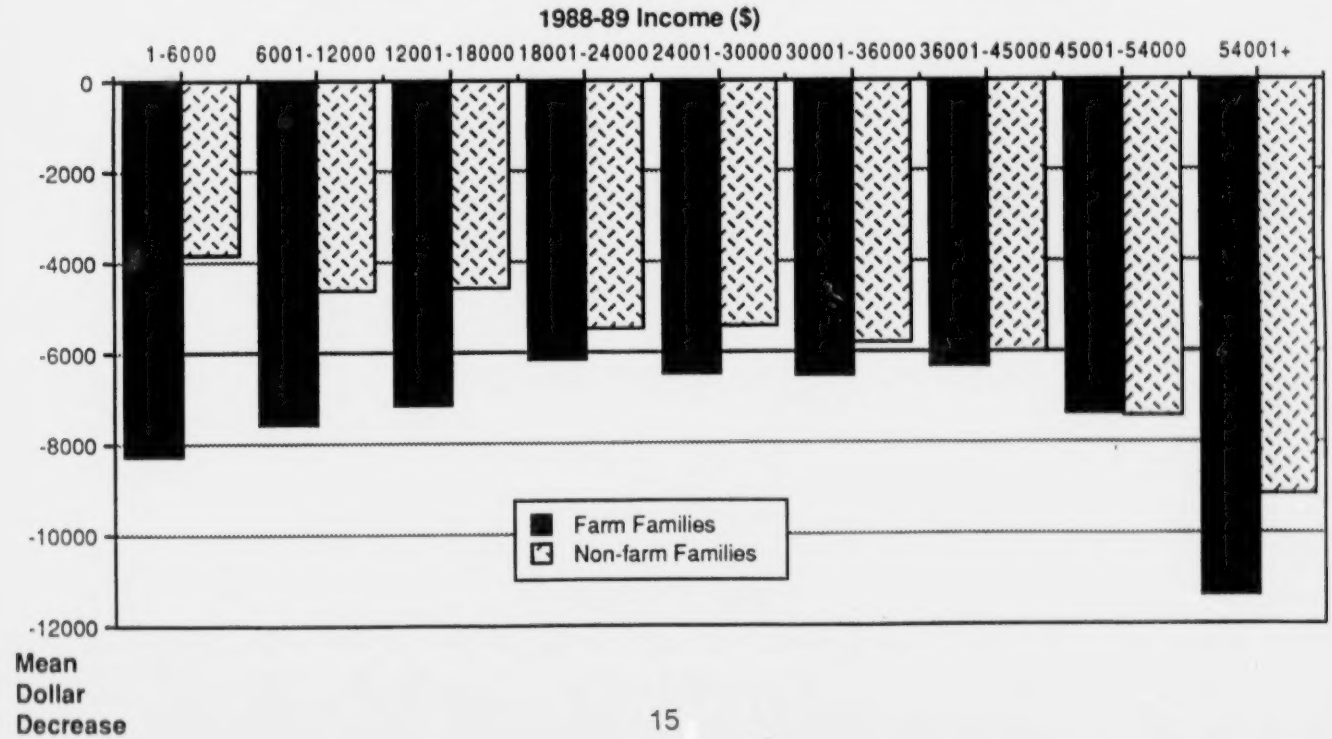
Farm family income varied more from year to year than non-farm family income, both in dollars and percentage change. The mean increase in income for farm families was more than twice the mean increase in income for non-farm families; the mean decrease in income for farm families was more than three times the mean decrease for non-farm families. The net change for farm families was 2.5 times greater than it was for non-farm families.

For the 2 years examined, the mean net change for farm families was strongly positive. This is consistent with the overall economic gains among farmers during this period. Furthermore, the amounts of increases and decreases in farm family income were greater than those for non-farm families. This suggests that changes in farm family income are highly variable, while those for non-farm families are more likely to be within a narrower range.

## EXHIBIT 3: PERCENTAGE OF FAMILIES WITH DECREASES IN INCOME FROM 1987-88 TO 1988-89 BY INCOME CATEGORY




## EXHIBIT 4: MEAN DECREASES IN INCOME FROM 1987-88 TO 1988-89 AMONG FAMILIES WITH DECREASES BY INCOME CATEGORY



## 3.3 Cross-Year Changes in Net Worth

Changes in net worth are presented in two ways. First, farm families are compared to non-farm families. Then changes in the farm and non-farm components of net worth for farm families are shown. For the latter analysis, we assume that all combined business/farm assets and debts among farm families are farm related.

### Farm Families Versus Non-Farm Families

Both farm families and non-farm families reported modest net changes in assets. However, more farm families reported increases in assets than decreases, while for non-farm families increases and decreases were balanced in number.

- Farm families: The mean net change from year to year was $3,032. This increase is only 3.9 percent of the mean net worth of $77,842 in 1987-88 and makes the value of farm assets appear fairly stable. However, a closer look reveals that the small net change was the result of high decreases in asset value among 39 percent of farm families nearly canceling out high increases in asset value among 52 percent of farm families. Only 9 percent of farm families reported that their net worth remained about the same.

- Non-farm families: The mean net change in the value of assets for non-farm families was $1,158, which is 4 percent of the mean value of base year assets of $29,173. This low net change was a result of increases and decreases each occurring among 46 percent of the families. Only 8 percent reported no change in net worth.

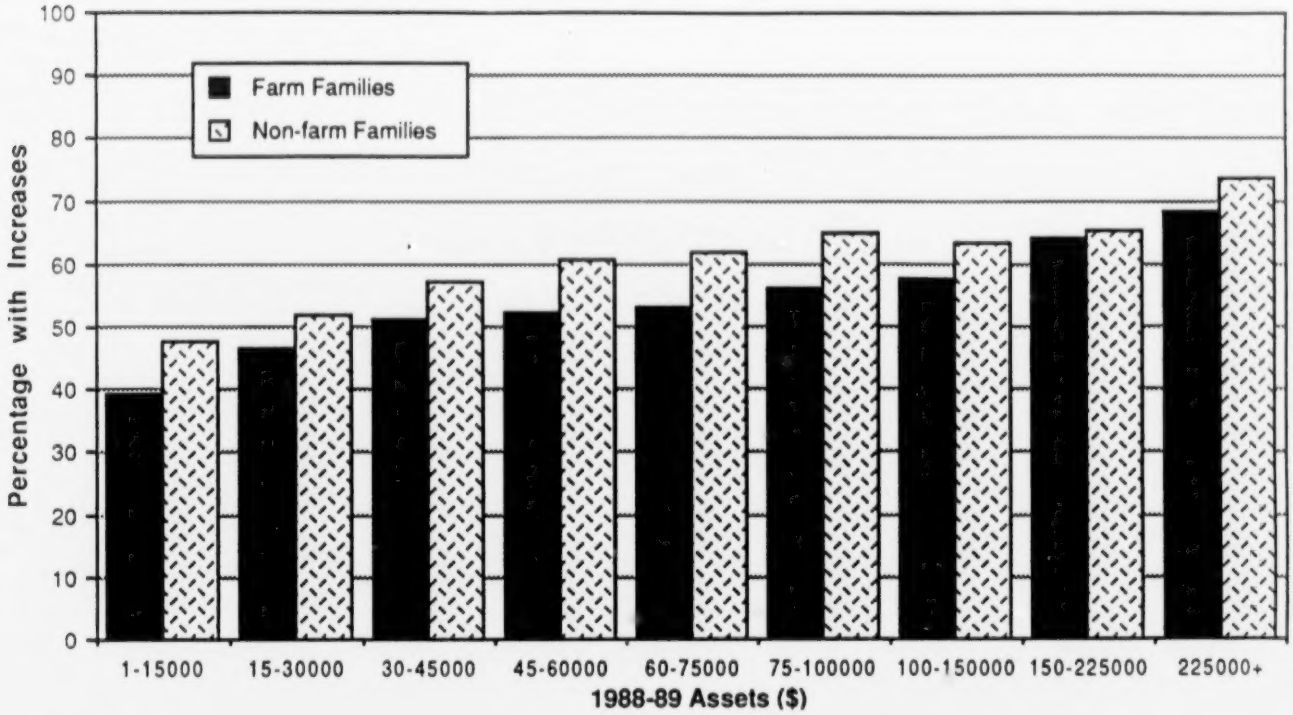
**Families with Increases in Net Worth.** On a percentage basis, the mean change in net worth for farm families and non-farm families was nearly identical. However, because farm families have substantially higher average net worth, the mean dollar amount of their change in net worth is greater than that of non-farm families.

- The mean increase in net worth among the 52 percent of farm families with increases was $26,217. This is 39 percent of the mean 1987-88 assets for this group of $66,637.

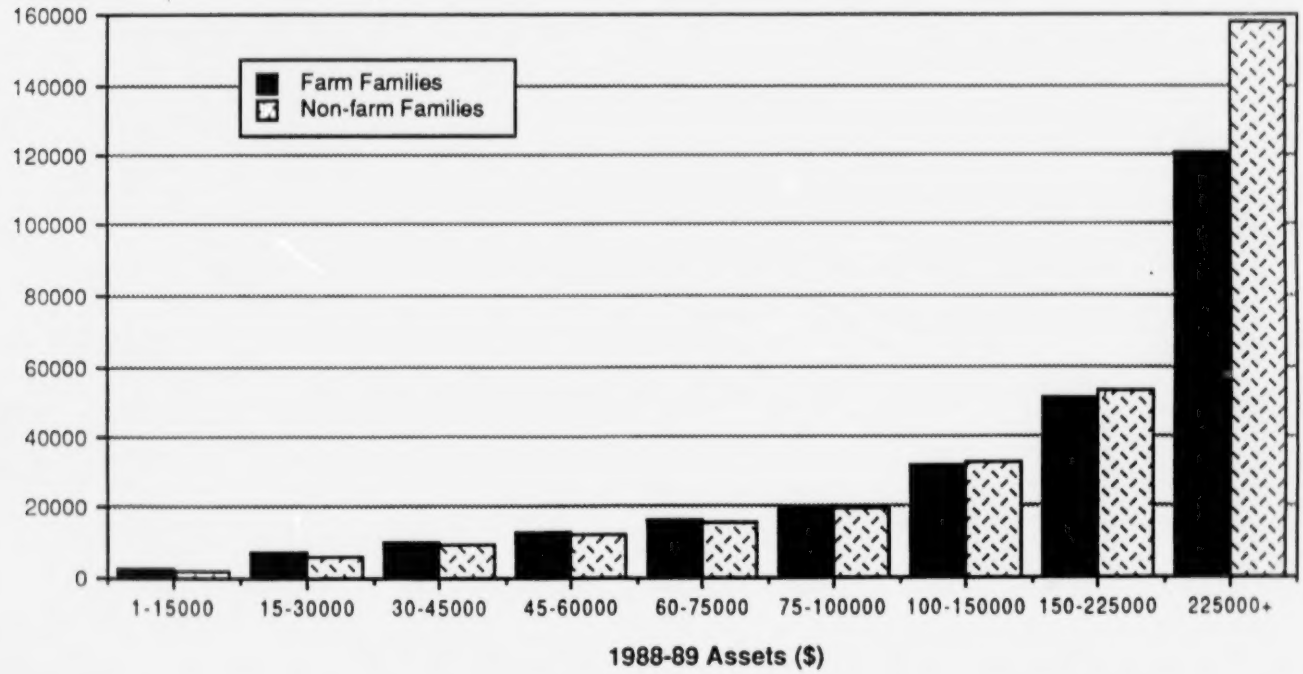
- For the 46 percent of non-farm families with increases in net worth, the increases averaged $11,300. This is 39 percent of the mean 1987-88 assets for this group of $29,289.

Exhibit 5 shows the percentage of farm and non-farm families with increases in net worth by 1988-89 asset categories. For both groups, the percentage of applicants reporting increases in net asset value rose with assets reported. For farm families, the percentages with increases ranged from nearly 40 percent of those with the lowest assets to nearly 70 percent of those with the highest

## EXHIBIT 5: PERCENTAGE OF FAMILIES WITH INCREASES IN NET ASSETS FROM 1987-88 TO 1988-89 BY ASSET CATEGORY




## EXHIBIT 6: MEAN INCREASES IN NET ASSETS FROM 1987-88 TO 1988-89 AMONG FAMILIES WITH INCREASES BY ASSET CATEGORY



assets. For non-farm families, the increases ranged from nearly 50 percent among those with assets valued up to $15,000 to almost 75 percent among those with assets valued at over $225,000.

The mean dollar amounts of increases in assets are shown in Exhibit 6.

- For farm families, the mean dollar increase rose steadily with the net assets reported from a low of $2,480 to a high of $120,491.

- For non-farm families, the mean dollar increase rose with the value of assets reported from $1,787 for the lowest asset group to $157,881 for the highest asset group.

**Families with Decreases in Net Worth.** On a percentage basis, decreases in net worth among farm families and non-farm families were comparable. Because of their greater net worth, the dollar amount of decreases for farm families was larger than that for non-farm families.

- For the 39 percent of farm families who reported a decrease in the value of their net worth, the mean decrease in value reported was $27,004. This is 29 percent of the mean 1987-88 assets for this group of $92,155.

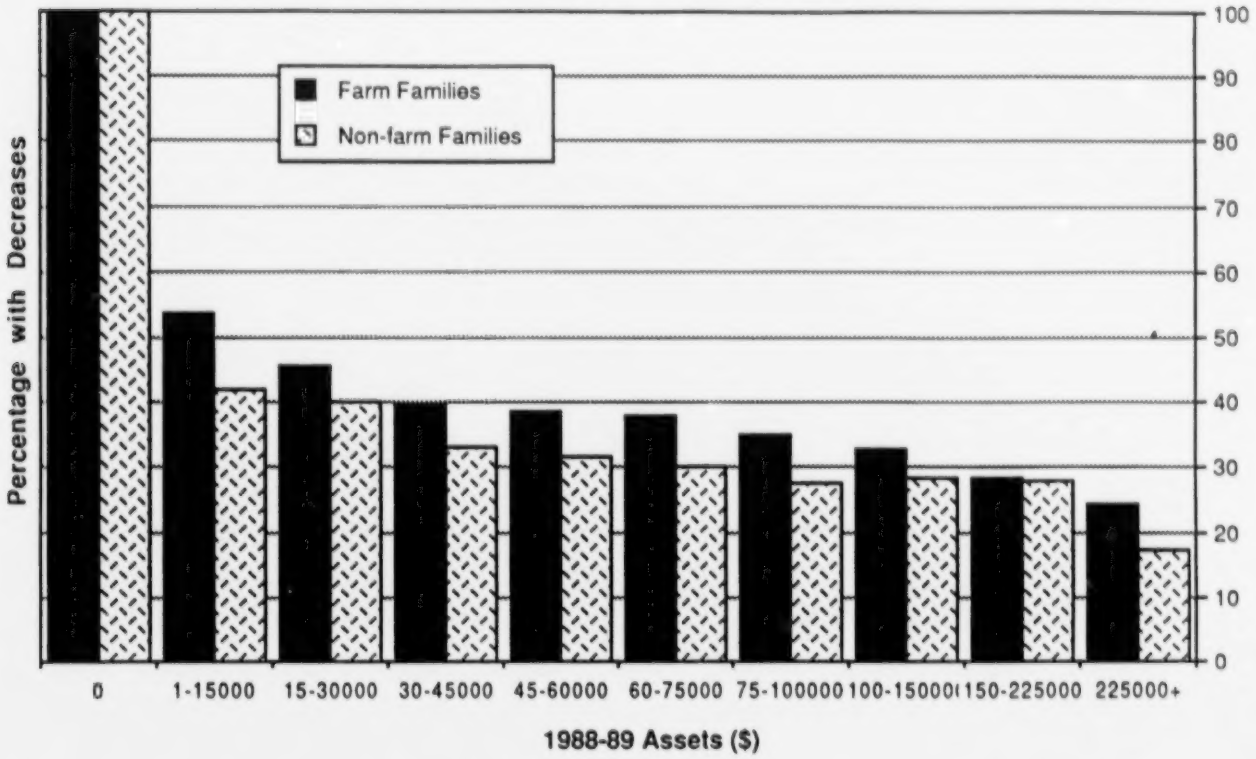
- For the 46 percent of non-farm families reporting declines in net worth, the mean decrease was $8,713 or 30 percent of the mean 1987-88 assets of $28,650.

Exhibit 7 illustrates the percentage of farm families and non-farm families reporting decreases in net worth by level of assets for 1988-89. For both farm and non-farm families, decreases were more prevalent among those with lower asset levels. For those with assets valued at greater than zero in 1988-89, the percentage reporting decreases declined as net worth rose for both farm and non-farm families. For farm families, just over 50 percent of those with assets valued up to $15,000 reported decreases, dropping to below 25 percent for those with a net worth of over $225,000. For non-farm families, the comparable percentages with decreases ranged from 42 percent of those with the lowest assets to 17 percent of those with the highest assets. Of course, for both groups, all of those with zero assets in 1988-89 reported a decline in net worth from the previous year, as those with zero assets in both years were excluded from this analysis and negative values of assets are not permitted under the statutory formulae.

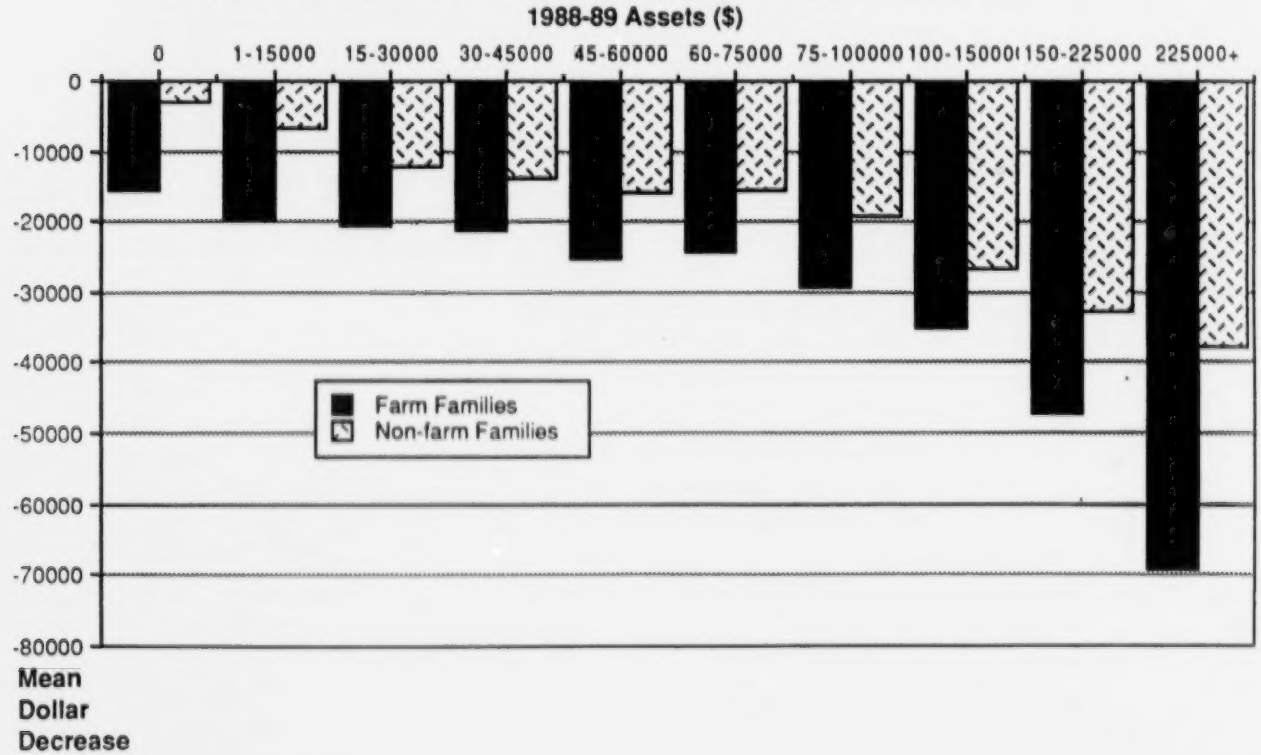
The mean dollar amounts of decreases for farm and non-farm families are portrayed in Exhibit 8.

- For farm families, the dollar value of the mean decrease in assets changed with the value of assets (from $19,724 for the lowest positive asset group to $69,112 for the highest asset group), but not in relation to the total value of assets. Thus, those with lower assets experienced greater losses than those with higher assets. Those with zero assets in 1988-89 reported a decline in net worth of more than $15,000.

## EXHIBIT 7: PERCENTAGE OF FAMILIES WITH DECREASES IN NET ASSETS FROM 1987-88 TO 1988-89 BY ASSET CATEGORY




## EXHIBIT 8: MEAN DECREASES IN NET ASSETS FROM 1987-88 TO 1988-89 AMONG FAMILIES WITH DECREASES BY ASSET CATEGORY



- For non-farm families, the mean dollar amount of decreases in assets also changed with net worth (from $6,713 for the lowest asset group to $37,706 for the highest asset group). Decreases in assets were highest for those with the lowest assets and lowest for those with the highest assets. Those with zero assets lost just over $3,000 in net assets.

**Summary of Net Worth Changes.** Both farm families and non-farm families showed substantial variability in net worth from one year to the next, although the average change was modest. Slightly more farm families experienced increases in net worth than decreases for the 2 years examined, while increases and decreases were the same for non-farm families. In dollar terms, farm families and non-farm families with similar net worth did not differ in the increases reported. However, for those with decreases, farm families experienced larger dollar losses than non-farm families with comparably valued assets. While farm family increases outnumbered decreases for the period of time examined, this may not always be the case.

The data suggest that some students from farm families may have greater shifts in their eligibility for Pell Grants attributable to changes in assets than students from non-farm families. However, because of the farm asset protection level, this only would affect families with larger farms.

## Farm Assets Versus Non-Farm Assets Among Farmers

We also examined changes in farm assets and non-farm assets for farmers to determine whether the changes in overall assets observed for farm families are primarily attributable to farm assets. To do this, we assumed that all combined business/farm assets are farm related. Thus, non-farm assets included those from cash/savings/checking, the home, and other real estate and investments.

The mean net change in farm assets of $2,537 was much larger than the $495 mean net change in non-farm assets. Even though 1987-88 farm assets averaged $46,302 and non-farm assets averaged $31,540, the change for farm assets (an increase of 5.5 percent) was proportionately larger than the change for non-farm assets (an increase of 1.6 percent).

For both farm and non-farm assets, the proportion of increases and decreases was about the same. For farm assets, 43 percent increased, 41 percent decreased, and 16 percent remained about the same. For non-farm assets, 48 percent increased, 41 percent decreased, and 11 percent remained the same.

For those with increases, the mean increase for farm assets was $25,059 compared to $11,611 for non-farm assets. For those with decreases, the mean decrease for farm assets was $20,218 compared to $12,632 for non-farm assets. The larger dollar amounts of changes for farm assets compared to non-farm assets are consistent with the greater value of farm assets.

Exhibit 9 shows the increases in farm assets and non-farm assets for farm families, while Exhibit 10 shows the mean increases.

- The percentage of families experiencing increasing assets rose sharply with the value of those assets, ranging from 20 percent at the lowest asset level to 65 percent at the highest. The mean dollar increase rose in proportion to 1988-89 farm assets from a low of $3,152 to a high of $100,258.

- For non-farm assets, the changes were relatively constant across asset levels, ranging from 43 percent for those with the lowest net worth to 54 percent for those with the highest net worth. As with farm assets, the mean dollar increase rose in proportion to 1988-89 non-farm assets (from $1,770 to $48,106). However, the dollar increases in non-farm assets were far smaller than the dollar increases in farm assets.

Exhibit 11 shows the percentage of farm families with decreases in farm assets and non-farm assets. Exhibit 12 depicts the mean amount of these decreases.

- The proportion of farm families with decreases in farm assets fell sharply with the value of farm assets, ranging from 73 percent at the lowest asset level to 23 percent at the highest. The mean dollar decrease rose with farm assets, from a low of $9,342 to a high of $66,726.

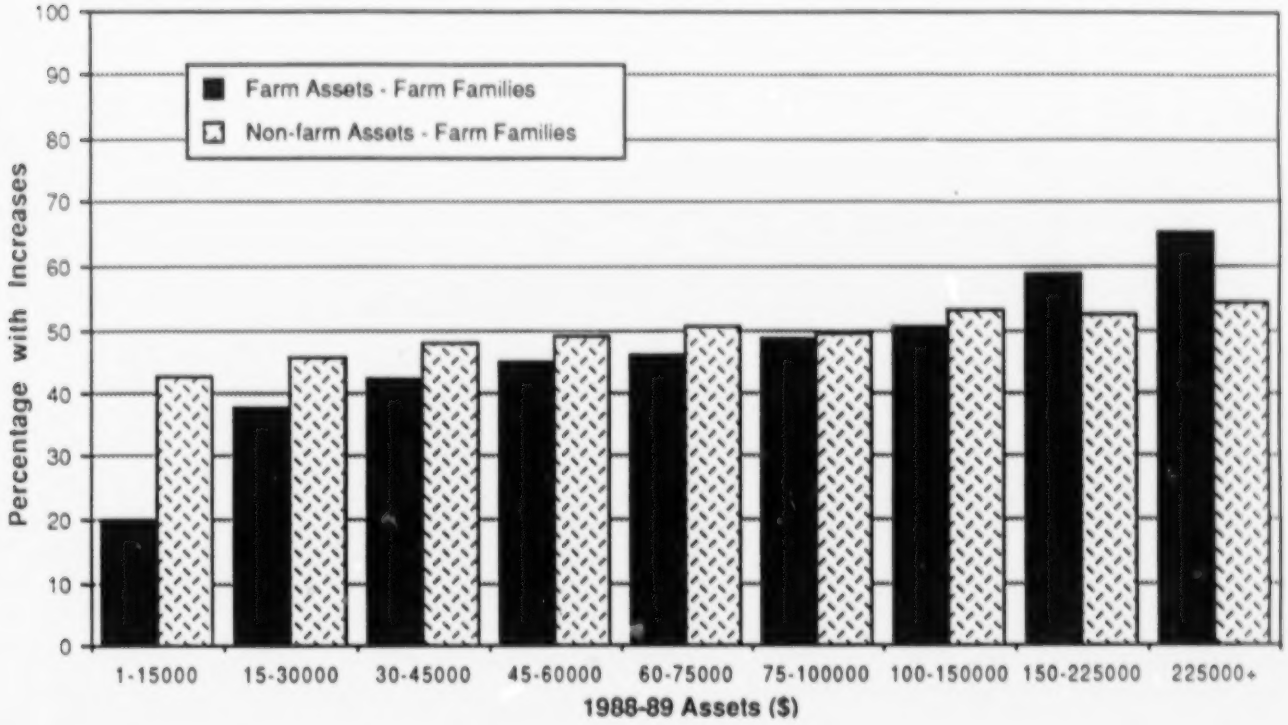
- For non-farm assets, the changes varied relatively little by assets, with from 47 percent to 34 percent of families in the non-zero asset categories reporting decreases. The mean dollar decrease also rose with non-farm assets, ranging from a low of $6,122 to a high of $31,831. As was the case with increases, dollar decreases in non-farm assets were far smaller than the dollar decreases in farm assets.

These findings indicate that the greater variability of farm assets differentiates farm families from non-farm families. Farm assets rose or fell far more than non-farm assets--on average about twice as much--for families with similar net worth. Thus, for families with assets above the asset reserve level, variations in the value of farm assets may play a substantial role in changes in eligibility for student aid from one year to the next.

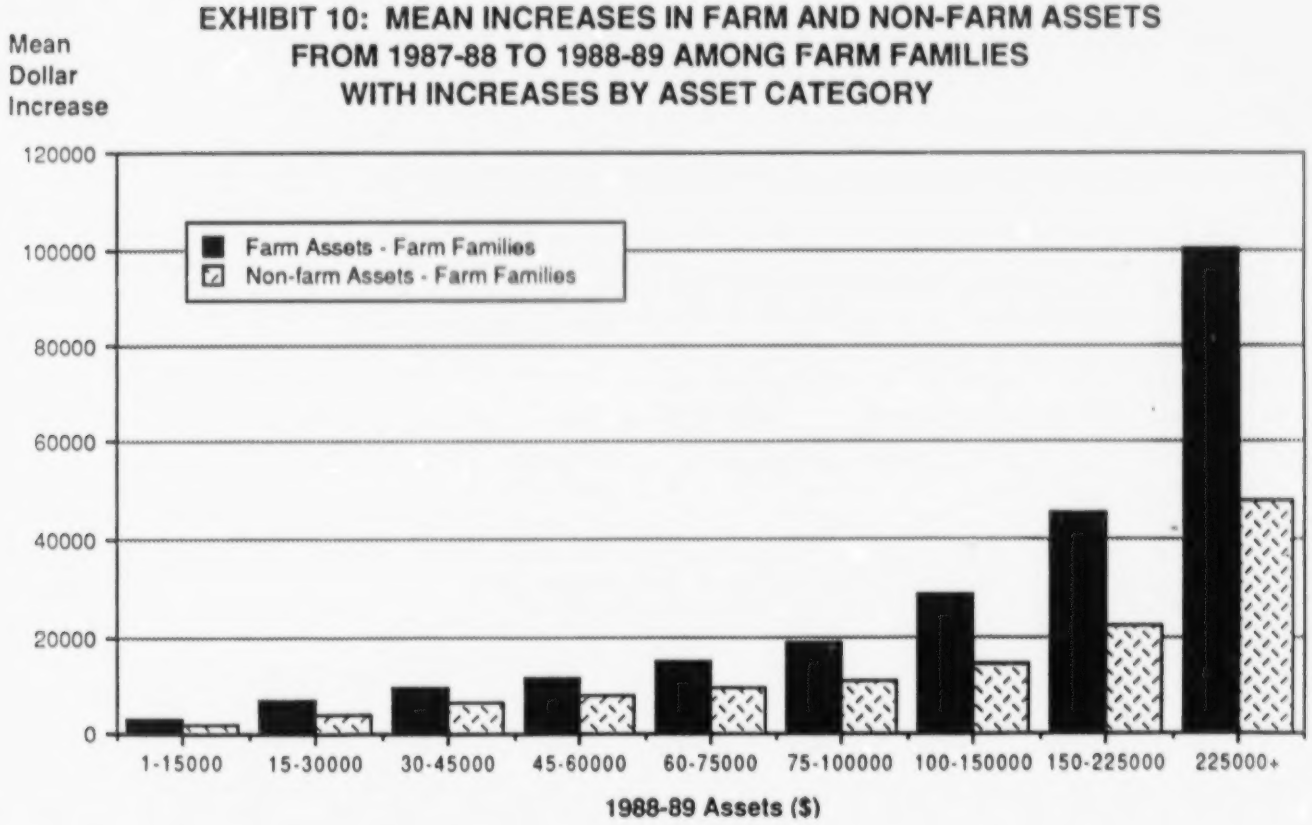
## 3.4 Implications of Changes in Income and Assets on SAI and FC

Because farm families tend to experience more variability in both income and assets than non-farm families, use of prior year figures may lead to large fluctuations in ability to pay from one year to the next. This is particularly true when farmers experience a very good or a very bad year. Over a period of years, given normal ups and downs in farm prosperity, the effects may average

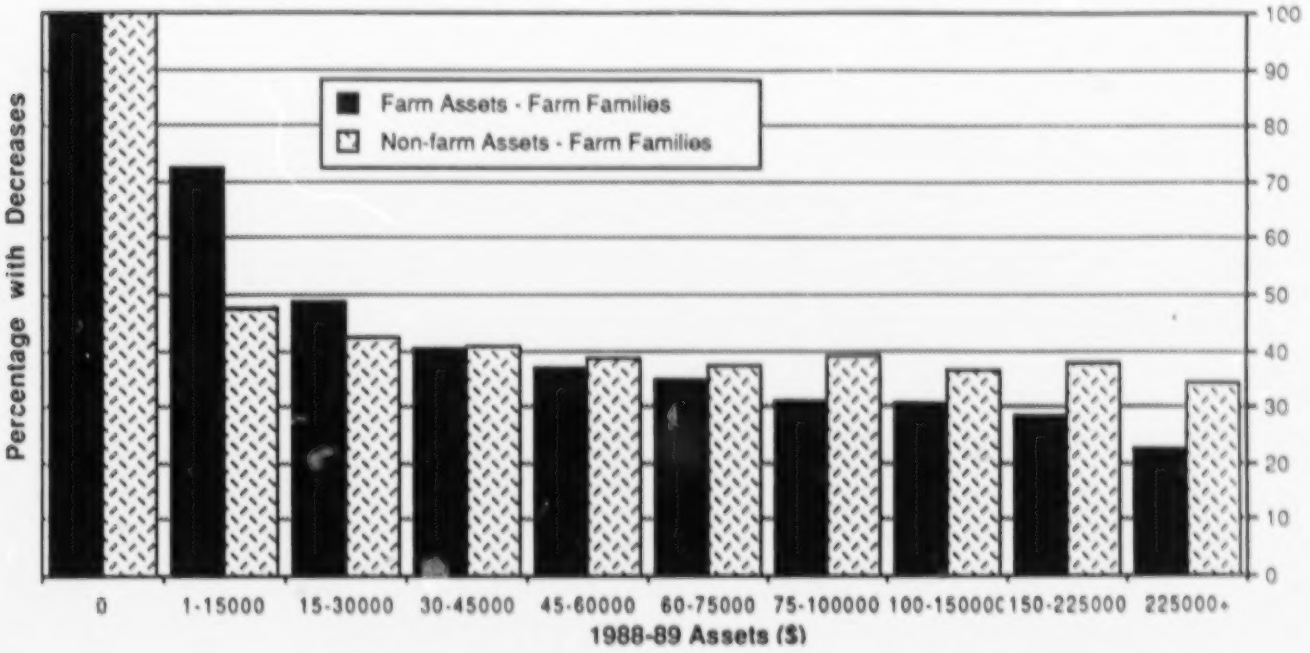
## EXHIBIT 9: PERCENTAGE OF FARM FAMILIES WITH INCREASES IN FARM AND NON-FARM ASSETS FROM 1987-88 TO 1988-89 BY ASSET CATEGORY



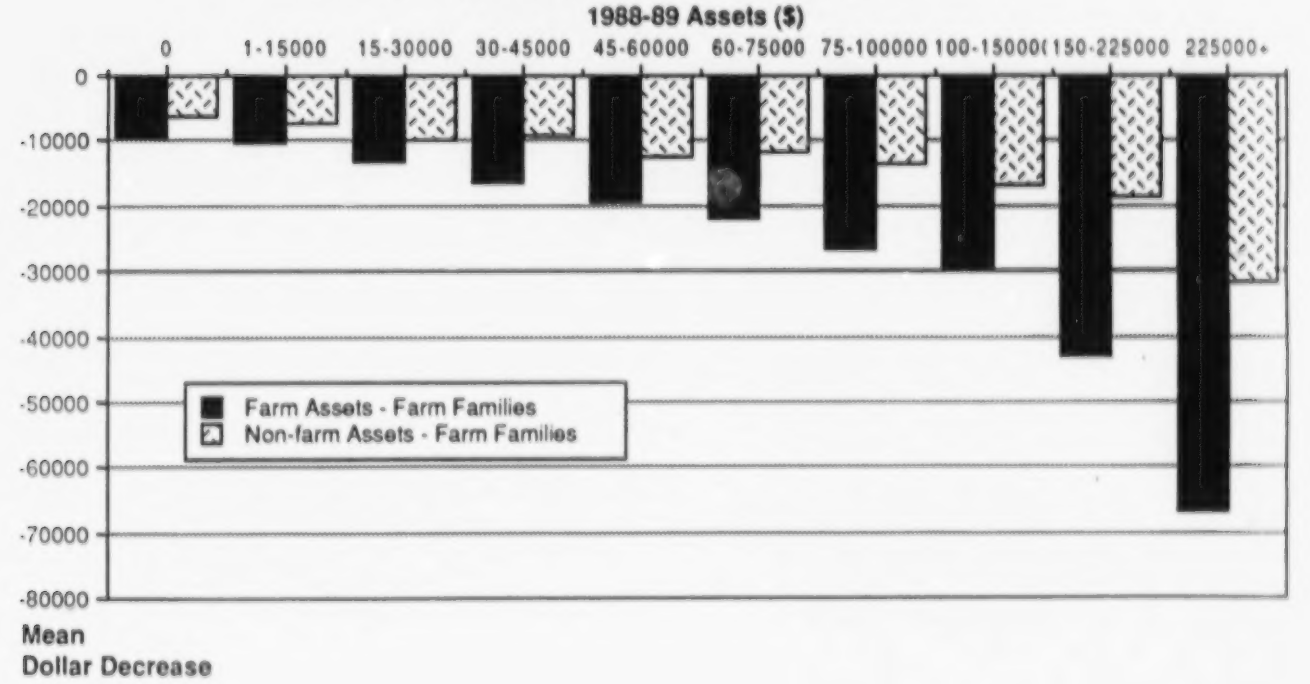

## EXHIBIT 10: MEAN INCREASES IN FARM AND NON-FARM ASSETS FROM 1987-88 TO 1988-89 AMONG FARM FAMILIES WITH INCREASES BY ASSET CATEGORY



## EXHIBIT 11: PERCENTAGE OF FARM FAMILIES WITH DECREASES IN FARM AND NON-FARM ASSETS FROM 1987-88 TO 1988-89 BY ASSET CATEGORY




## EXHIBIT 12: MEAN DECREASES IN FARM AND NON-FARM ASSETS FROM 1987-88 TO 1988-89 AMONG FARM FAMILIES WITH DECREASES BY ASSET CATEGORY



out. However, in the short run, farm families are likely to be treated differently than non-farm families of similar circumstances.

The family contribution calculation yields the Student Aid Index (SAI) under the Pell approach (called the Pell Grant Index beginning in 1990-91) and the Family Contribution (FC) under the Congressional Methodology. Both the SAI and FC increase as income and net worth increase, if other values remain constant. Each is defined as follows:

- SAI permits determination of a Pell award based on cost of education and enrollment status. Maximum eligibility is designated by SAIs of zero. In 1988-89, full-time students with SAIs of zero and a cost of education exceeding $3,700 received the maximum award of $2,200. For 1988-89, applicants with SAIs above 2,000 were ineligible for a Pell Grant.

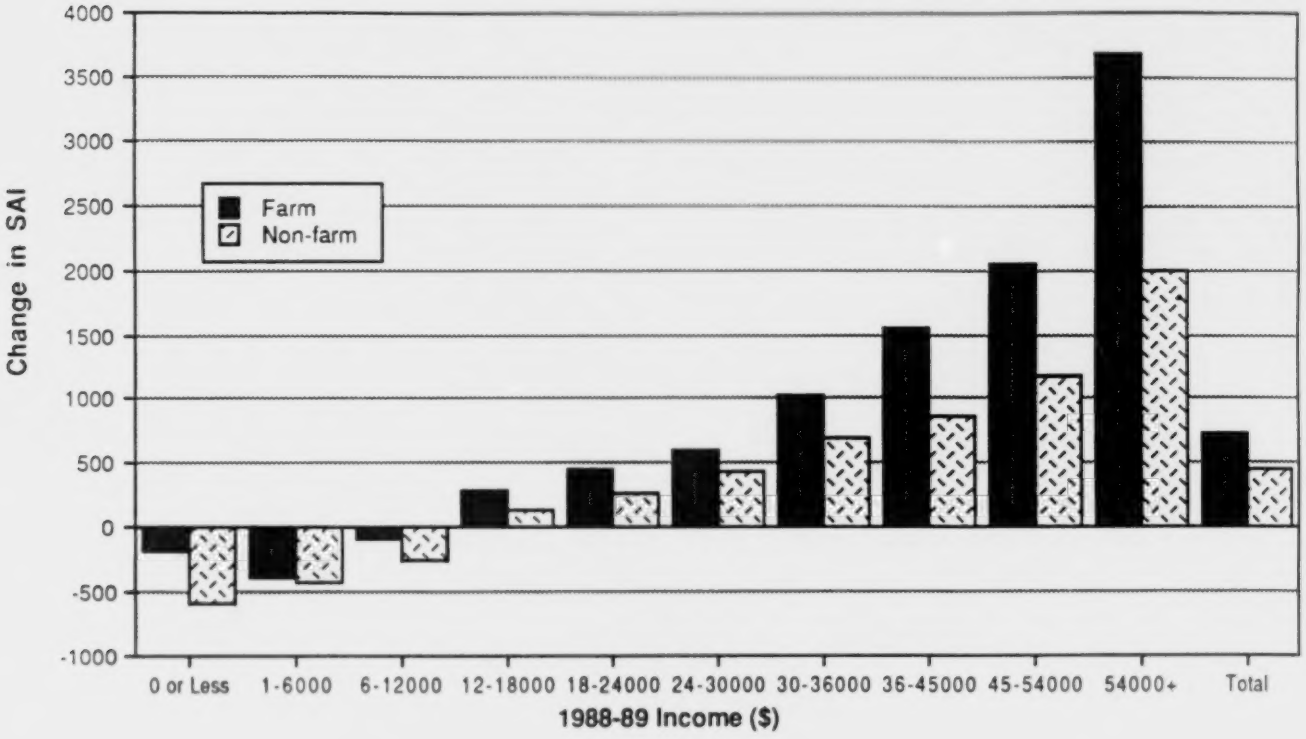
- FC is the dollar amount that a family is expected to contribute to the cost of education. The difference between the cost and the FC is need. Thus, as the FC increases, the amount of student financial aid generally decreases. There is a minimum FC of $700 for first year dependent students, $900 for other dependent students, and $1,200 for independent students without dependents. There is no fixed minimum FC for independent students with dependents.

So far, we have examined differences between farm and non-farm families in changes in income and net worth across years. For the 2 years examined, there were more increases than decreases in income and assets for both groups, but the differences were especially dramatic for farm families. Also, farm families experienced proportionately higher dollar changes in income than non-farm families. Thus, while both farm and non-farm families with gains in net worth above the asset reserve should show increases in SAI and FC, farm families should show more pronounced changes. We should emphasize, however, that some increases in SAI and FC across the 2 years were expected, because our methodology made no adjustments for inflation in income and assets.

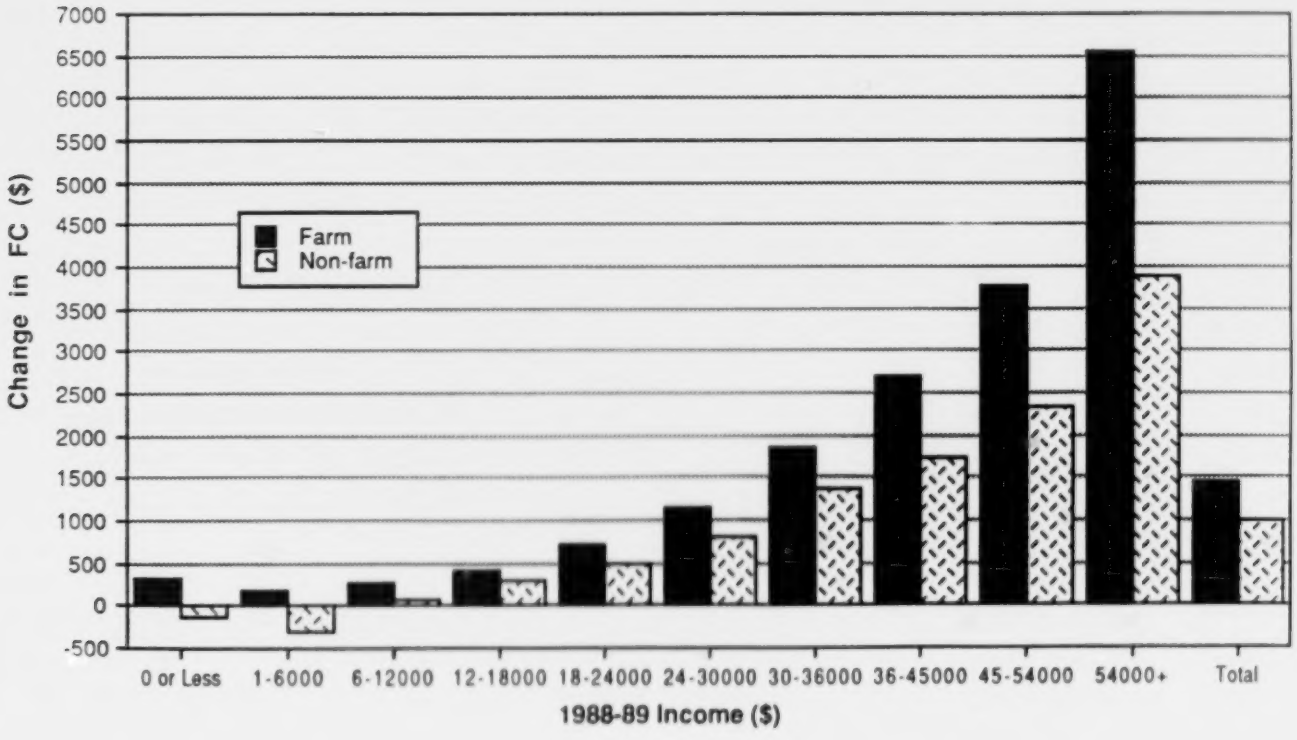
To compare changes in SAI and FC for farm and non-farm families, we calculated each measure using the appropriate data and formulae. (There are six variants each of the SAI and FC formulae. Each formula was programmed and tested for accuracy against the Pell applicant file.) For a given family, we calculated the SAI and FC using both the 1987-88 applicant data and the 1988-89 applicant data in the appropriate 1988-89 formula. While this introduces a bias in the 1987-88 results, it is a systematic one that applies equally to both farm and non-farm families. Thus, any differences between farm and non-farm families would reflect differences in cross-year variation between them.

Exhibits 13 and 14 depict changes in SAI and FC from 1987-88 to 1988-89 by income category for farm and non-farm families. The total change columns on the far right in each exhibit are most important because they provide an overview of the impact of cross-year changes for all income and asset categories combined. By comparing changes for farm and non-farm families we obtain a picture of how the two groups are treated under the current law.

## EXHIBIT 13: MEAN SAI CHANGE FROM 1987-88 TO 1988-89 BY INCOME CATEGORY




## EXHIBIT 14: MEAN FC CHANGE FROM 1987-88 TO 1988-89 BY INCOME CATEGORY

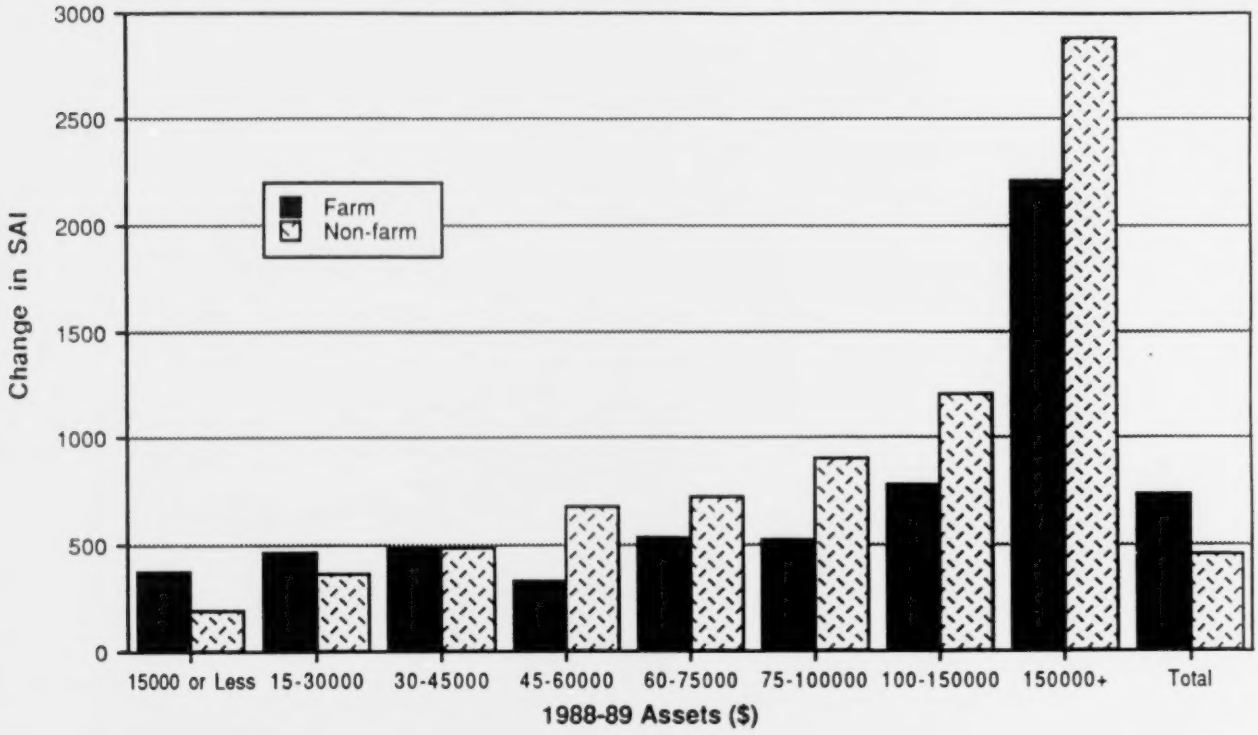


For all categories combined, farm families had a 730 point increase in SAI from 1987-88 to 1988-89, while non-farm families had only a 449 point increase. In FC, farm families had a mean increase of $1,432 compared to only $992 for non-farm families. Thus, the much larger increase for farm families implies that, as a group, *farmers benefited more than non-farmers from using prior year data rather than current year data, at least for the 2 years examined, because prior year data under-represented the ability of farm families to pay for the cost of education.*

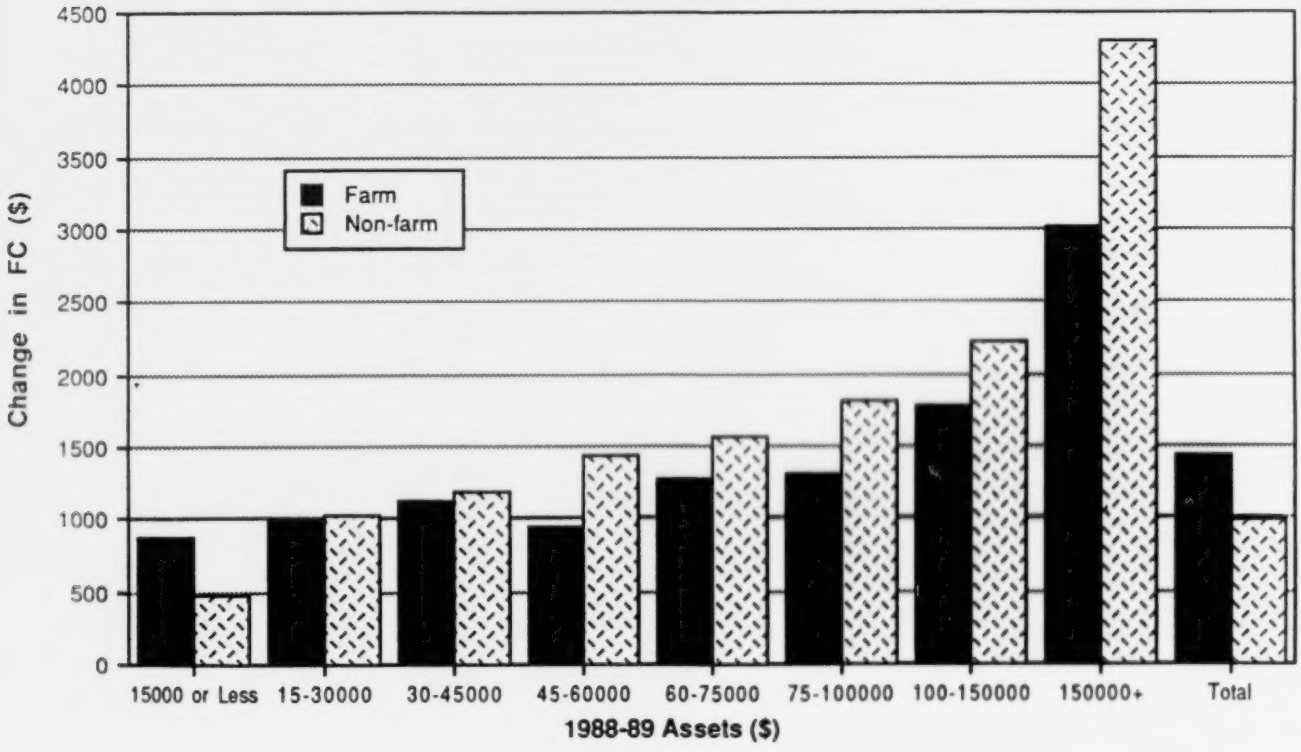
A closer look at the data in Exhibits 13 and 14 reveals that for every income group farm families had greater gains in SAI and FC (or, in the lowest income categories, smaller losses) than non-farm families. The differences between farm families and non-farm families were particularly pronounced in the higher income groups.

Changes in SAI and FC by asset categories are shown in Exhibits 15 and 16. Of course, the totals on the far right are the same as those in Exhibits 13 and 14. For specific net worth categories up to the amount of the asset protection level, changes in SAI or FC are unlikely to be due to changes in assets unless there was an unusual increase or decrease in the value of these assets. For the higher net worth categories, where the value of assets might affect the SAI or FC, farm families had smaller increases in SAI and FC than non-farm families. However, relatively few non-farm families had net assets in this range.

## EXHIBIT 15: MEAN SAI CHANGE FROM 1987-88 TO 1988-89 BY ASSET CATEGORY




## EXHIBIT 16: MEAN FC CHANGE FROM 1987-88 TO 1988-89 BY ASSET CATEGORY



# 4. REDUCING DIFFERENCES BETWEEN FARM AND NON-FARM FAMILIES

With one exception--the higher asset reserve for farm assets compared to non-farm assets under the Pell approach--the need analysis formulae treat farm and non-farm families with similar means similarly. Nonetheless, there are some differences between farm families and non-farm families in the extent to which the required application items reasonably reflect *current* financial ability. The major findings can be summarized as follows:

- Farm families may have greater difficulty in accurately estimating the value of their farm holdings (especially the land) than do other families in estimating the value of home assets or other real estate holdings. The reason for this is that changes in the fair market value of farmland are difficult to assess because of infrequent turnover and the large variation between farms within an area. However, there is no evidence to indicate whether inaccurate real estate estimations present an advantage or disadvantage to farm families, because there is no way to determine the direction of any errors in estimation made.

- Using Adjusted Gross Income from the tax return as income for student aid purposes benefits farm families, since AGI may under-represent farm income because of tax advantages provided to farmers.

- Because of greater variability in income, the reported base year income is a better indicator of current income for non-farm families than for farm families. In particular, for the 2 years examined, farm families benefited by using past year income since, as a group, they experienced above average increases in income from 1987-88 to 1988-89. Thus, the SAI and FC calculated from prior year application figures under-represented the ability of farm families to make contributions from income. *It is important to emphasize, though, that this may be a function of the 2 years examined, and that in other years, farm families may fare the same as or worse than non-farm families.*

This section focuses on the possibility of reducing any differences that may exist in the treatment of farm and non-farm families. Unfortunately, some of the ways to reduce differences are impractical and may introduce more problems than they solve. For example, little can be done to address the difficulty that farmers have in accurately estimating the value of their holdings. Similarly, tax returns are the only source of income figures that are both accessible and verifiable. Finally, estimates of current year income would likely be at least as problematic as prior year income figures and could not be verified.

The only possibility considered here is to identify families prone to high changes in SAI or FC and develop guidelines to promote the equitable distribution of student aid to these families. While we know that farm families have more variability in income and assets than non-farm families, it would be helpful to identify particular types of farm families that are prone to high change. Once these families were identified, guidelines could be developed to meet the needs of applicants in as fair and equitable a manner as possible. For example, financial aid administrators might use these guidelines when packaging aid.

## Identifying Farm Applicants Prone to Changes in Need

Changes in need from one year to the next may be associated with certain characteristics. Thus, we attempted to identify the characteristics of applicants whose SAI changed greatly from 1987-88 to 1988-89. Because changes in SAI and FC are largely similar, we limited the analysis to SAI change. Also, because many changes in SAI are small, we decided to restrict the analysis to applicants with the largest changes in SAI. Accordingly, we selected those applicants with SAI changes of 100 points or more and divided them into two groups: those with positive change and those with negative change. About two thirds (68 percent) of the farm family applicants were within the high change group, 55 percent of these with high positive change and 23 percent with high negative change.

Because change in SAI is a function of income and assets, we examined characteristics of those with high change by income and asset groups.

Unfortunately, the characteristics that could be examined are limited since the application for student financial aid includes few demographic variables that would be useful in identifying those prone to SAI change. We included all those available of possible interest: family members in college (and change in family members in college), nontaxable income (and change in nontaxable income), income change, assets change, and age of older parent for dependent students.

The results indicate that the Federal financial aid data available is insufficient for developing profiles of applicants with changes in need for either farm families or non-farm families. Most of the variables examined are only weakly related to change in SAI from one year to the next for the most prevalent type of farm family, married parents with a dependent student. (This type of family accounts for 89 percent of farm families. Of the remaining types of farm families, 5 percent are unmarried parents with dependent students, and 6 percent are independent students.)

The findings show that only income and asset change are related to high SAI change for most farm families, because these factors determine the SAI more than any others. These findings are consistent with those previously observed on changes in income and assets and do not identify any additional characteristics that make some farm families particularly prone to change.

- Decreases in income are associated with decreases in SAI for farm families with high SAI change. Increases in income are associated with increases in SAI, with the exception of those with the lowest incomes. These low-income applicants do not have increases large enough to change their SAIs, which are usually zero.

- Changes in net worth are associated with changes in SAI, with those with decreased worth having lower SAIs and those with increased worth having slightly higher SAIs.

For purposes of comparison, we also examined the same variables for non-farm family applicants with high changes in SAI. The results were similar to those found for farm family applicants.

For farm families, the annual differences in income and asset valuation probably reflect the farm economy in the area or variation in the particular crop or livestock enterprise on which the farm principally depends. Thus, in postsecondary institutions with appreciable numbers of farm family applicants, financial aid administrators may be aware of regional or local factors that affect the ability of farm families to pay. For example, a change in weather or prevailing crop prices may make ability-to-pay estimates based on the income or assets reported on the application unrealistic. By taking into account the current financial condition of farm families in the area, assurances of equity in need analysis for farm families could be made without cumbersome changes to the formulae.

# APPENDIX A

# ESTIMATES OF FARM INCOME

U.S. Department of Agriculture (USDA) estimates of aggregate net business income for farms exceeded those provided by the Internal Revenue Service (IRS) by $44 billion in 1986, a gap that has grown from $6 billion in 1965. Part of this difference is explained by the fact that USDA excludes the smallest farms (those with annual sales of less than $1,000), which often report negative income, while the IRS imposes no minimum. Other reasons for the differences are the treatment of specific items by each, as follows:

- USDA counts the value of livestock removed (e.g., poultry produced under contract with a processor) as farm income, while the IRS does not unless there is a monetary transaction.

- The IRS permits some livestock and other products to be treated as long-term assets that must be depreciated, which means that revenue generated from sales would be a capital gain rather than income.

- The value for depreciation used by the IRS (historical asset cost) permits more rapid write-off than does that used by USDA. This provides a benefit to farmers except in periods of high inflation, when there would be offsetting factors.

- USDA separates household interest expenses and taxes from farm interest expenses and taxes. This is supposed to be the case with the IRS, but many farmers may not exclude the interest and taxes paid on their home and the land on which it is located.

# APPENDIX B

# METHODOLOGY: COMPARING CHANGE ACROSS YEARS

Applicants were selected from the 1988-89 applicant file and merged with the 1987-88 applicant file. Out of 6,519,315 individual applicants in the 1988-89 file, 178,271 reported farm assets. We selected a simple random sample of 44,558 farm family applicants from the 1988-89 file, which yielded 17,286 farm family applicants for both the 1987-88 and 1988-89 award years. For non-farm applicants, 27,288 out of 57,383 applicants randomly selected from the 1988-89 applicant file also applied for Federal student aid in 1987-88. Thus the study sample contained data from both the 1988-89 and 1987-88 award years for 17,286 farm family applicants and 27,288 non-farm family applicants.

Among farm families in the sample, 14,415 reported income data for the two years and 14,122 had asset data for the 2 years. Among non-farm families, 20,029 had cross-year income data and 12,949 had cross-year asset data. (Note that families who qualified for and used the Simplified Needs Test in 1988-89 were not requested to report assets on the application and, thus, were excluded from the cross-year sample.)

Comparing changes in need analysis across 2 years might be expected to be relatively simple. However, because of major program changes from 1987-88 to 1988-89, the following research questions had to be resolved:

- Is it appropriate to use the 1987-88 data in the 1988-89 formulae?
- How will the data be made comparable, given changes in some of the data elements on the application?
- How should we deal with applicants whose dependency status changed from 1987-88 to 1988-89?
- What criteria will be used to identify non-farm families that are "similar" to farm families?
- What should we do with applicants whose aid was based on a special circumstance in either year?
- Should the Simplified Needs Test be used, and if so, when?
- Should any adjustments for inflation or changes in family circumstances be made to make 1987-88 data comparable to 1988-89 data?

Each of these concerns and our treatment of it is described below.

**Using 1987-88 data in the 1988-89 formulae.** We were able to use 1987-88 data in the 1988-89 formulae without introducing any systematic biases because farm and non-farm families were affected in equivalent ways. Furthermore, our goal was to compare these groups, not to provide a model of actual grants or expenditures for student aid.

**Matching data elements across the two years.** This was a practical problem because of the changes in the application during that period. For example, we needed to distinguish farm and non-farm families on the 1987-88

file when the application in that year did not ask applicants to indicate whether any of their business/farm assets were attributable to a farm. To do this we assumed that all families who reported that some of their assets in 1988-89 were farm related also held farm-related assets for the previous year. Only rarely would this assumption be incorrect. Other differences in the 1987-88 and 1988-89 applications were minor and required only that care be used in determining which 1987-88 data elements were equivalent to 1988-89 data elements, either alone or in combination.

**Changes in dependency status.** If an applicant's dependency status changed, the results of need analysis would be based on parent data for one year and student data for another. This would make any cross-year comparisons meaningless. Thus, we excluded from the data analysis all cases where dependency status changed. (Those excluded represented less than 1 percent of farm families and about 6 percent of non-farm families; over 90 percent of dependency status switchers in each group changed from dependent status to independent status.)

**Selecting non-farm families who are similar to farm families.** Because all farm families, by definition, reported the presence of some business/farm assets, it might seem reasonable to apply the same criteria to non-farm families. This would have resulted in a comparison between those families with farm businesses and those families with other businesses. However, families with other businesses may themselves be unique, and thus not a good comparison group. Another possible approach was to include as non-farm families only those reporting assets in at least one of the asset categories reported on the application: cash/savings/checking, home, other real estate/investments, or business. However, this would have skewed the comparison group toward those with higher incomes (because income and assets are positively correlated) and eliminated the more than 40 percent of applicants reporting no assets of any kind (including cash on hand or in checking or savings accounts). Thus, the best approach was to include all non-farm applicants in the comparison group and, in discussing the results, compare groups of similar asset and income levels.

**Dealing with special circumstances.** Several special circumstances required unique treatment for one of the years examined. These were dislocated workers and displaced homemakers (1988-89), cases where the financial aid administrator used discretion (1988-89), and special condition applicants (1987-88). These designations require the use of different data than is usually the case in determining need (e.g., expected year income rather than base year income or disregarding home assets). This would have made any cross-year comparisons misleading. Thus, any applicant using one of these designations in either year was excluded from the analysis.

**Using the Simplified Needs Test (SNT).** The SNT allows families with a combined student-parent taxable income of $15,000 or less (providing they used Form 1040A or 1040EZ for their Federal tax returns or did not file Federal returns) to use a shortened version of the application that omits supplemental information on expenses, veterans benefits, expected income and benefits (if applicable), and assets. For those who met the qualification in 1988-89, the SNT results were used, with one exception. This exception was for families who

reported business/farm assets but claimed to have qualified for the SNT. For this group we used the regular needs test to enable us to include their assets, as the claim of meeting the criteria for SNT may have been an error. In 1987-88, the SNT was not available. Thus, we applied the same criteria to that year's data as we used for the 1988-89 data and used SNT if the applicant qualified.

**Adjustments to the data for inflation or changes in family circumstances across years.** We considered adjusting the data elements for inflation, but decided against doing so. It would have been difficult to select the appropriate adjustments for income and assets for both farm and non-farm families. Furthermore, if the adjustments were not accurate they might have introduced problems or discrepancies, rather than solve them. Since farm and non-farm families were expected to have been affected by inflation in similar ways, the more reasonable approach was to make no adjustments for inflation. Neither did we make adjustments for families where there are changes in circumstances that might affect the family contribution. Doing so might have obscured some of the changes in need that result from changes in marital status, number of family members, family members in college, certain expenses (elementary/secondary tuition, medical/dental costs, moving from a low tax state to a high tax state), and changes in assets.

While we did not account for changes that may influence the ability of the family to pay from one year to the next, we did make changes in two areas. The first of these was the age of the older parent (or student for independent students), which is used to decide the asset protection level in the FC formulae. We held this age at the highest level because all data were being used in the 1988-89 formulae. The second was the dependent student contribution, which under the Congressional Methodology is $700 for first year dependent students and $900 for other dependent students. We held this contribution at the $900 level for dependent students because all data were used in the 1988-89 formulae and because, by definition, first year students were not included in this analysis, as they did not apply for aid in the previous year.